

REMARKS

Claims 1 and 11 have been amended. Claims 1-18 remain in the application. No new matter has been added. Reconsideration of the application, as amended, is respectfully requested.

The amendments herein disclosed are made in response to U.S. Patent Number 6,002,671 ("Kahkoska"), to be discussed later, and not in response to the specific rejections made by the examiner. As a result, such amendments could not have been made earlier since that particular reference was not brought to the attention of the applicant until the Final Office Action.

In the following text, specific references to the present application and the prior art are made using the notation "x:y", where "x" denotes the page or column number, and "y" indicates the line number, within the document being discussed.

Discussion Concerning Lam and Dipperstein

Currently, claims 1-18 stand rejected under 35 U.S.C. 103(a) as being unpatentable for obviousness over U.S. Patent Number 5,901,202 ("Lam") in view of U.S. Patent Number 6,185,191 ("Dipperstein"). The applicant respectfully traverses. The applicant believes that the amendments to the claims as made in Amendment "A" are sufficient to overcome these rejections.

The applicant believes that the combination of Lam with Dipperstein fails to teach the slave test unit and method cited in the claims of the present application prior to the amendments herein enclosed. More specifically, no combination of Lam and Dipperstein teaches the ability of a slave test unit to execute test commands that include the generation of test signals.

As stated in the response to the first Office Action (Amendment "A"), the only functionality required of the Lam slave unit, the Voice Response Unit (VRU) 180, in the way of command execution is the ability to go on-hook (4:16 – 4:19) and off-hook (3:30 – 3:33) with respect to the phone lines to which it is connected, to bridge between two phone lines (3:37 – 3:39), and to dial a phone number (4:1 – 4:2). The actual testing of the remote phone line, including the generation of any test signals, is performed by the master test unit (4:6 –

4:15). Lam does not disclose a slave test unit (i.e., a test unit not being controlled locally by a human operator) that generates test signals.

Likewise, Dipperstein does not teach a slave test unit having the ability to generate test signals. Instead, Dipperstein, while disclosing the use of two test sets that “may operate in respective master and slave modes,” indicates that this configurations allows “a craftsperson using the master test set to initiate a bit error rate test (BERT) from one end of the circuit.” (2:41 – 2:47). In other words, the test unit acting as the master (i.e., the unit being operated directly by a craftsperson) is the unit that initiates and performs the actual testing of the line, not the slave test unit. Furthermore, the majority of the summary portion of Dipperstein describes the use of a BERT, wherein “the master test set initiates a BERT (by causing the transmission of a pseudo random bit stream over the looped back bearer channel(s)).” (3:49 – 3:51) The entire sequence of events described, including the clearing and setting of loopback circuits, and the sending of the test patterns, is initiated by the master test unit, which is the one being controlled directly by the human operator (3:12 – 3:65). What Dipperstein does not disclose is the ability of a slave test unit (i.e., one not in the physical presence of a human operator) to generate test signals, as cited in claims 1 and 11 of the present application.

¶. As neither Lam nor Dipperstein disclose the ability of a slave test unit to generate test signals, the applicant believes that claims 1 and 11, as amended in Amendment ‘A’, are not made obvious by Lam in view of Dipperstein. As a result, the applicant believes claims 1 and 11 are allowable. Also, since claims 2-10 are dependent on claim 1, and claims 12-18 are dependent upon claim 11, the applicant believes that these claims are allowable as well, as they all incorporate the feature that the slave test unit has the capability of generating test signals.

More specifically with respect to claim 2, the applicant does not believe Lam teaches the encoding of test commands by a slave test unit. The slave unit of Lam has the ability to decode and execute the commands listed above (go on-hook, go off-hook, dial a phone number, etc.), but does not have the ability to encode any commands to be sent to another remote test unit, such as a master or another slave unit, for execution by that remote test unit. Dipperstein discloses a slave test unit that may execute commands, such as CLEAR ALL LOOPBACKS and ACTIVATE LOOPBACKS sent from a master test unit (3:28 – 3:52). In response, the slave unit returns messages, such as LOOPBACKS CLEARED and

LOOPBACKS ACTIVATED, which serve merely to inform the master test unit of the status of the slave test unit after command execution (3:28 – 3:52). Dipperstein does not mention the possibility of the slave unit encoding commands, which would then be transmitted to a remote test unit for execution; only status messages are transmitted. Thus, neither Lam nor Dipperstein, nor any combination thereof, disclose nor make obvious a slave test unit as cited in claim 2.

Regarding claims 3-4 and 12-13, Lam does not teach a dialback command being executed by the VRU 180, acting as a slave test unit. In that disclosure, Lam indicates that the VRU goes “off-hook” on the remote line 190 (3:30 – 3:35). Once this has been accomplished, the dialing referred to by the examiner is performed by the human operator or the master processor 110 (3:53 – 3:62). Thus, the VRU 180 does not perform the dialing, so it is not executing a dialback command. Concerning Dipperstein, although loopback and callback functionality of a slave is disclosed, as also stated in Amendment ‘A’, Dipperstein does not disclose the ability of a slave to generate test signals, as is required in claims 3-4 and 12-13 by virtue of their dependency on claims 1 and 11, respectively. Thus, the applicant believes that claims 3-4 and 12-13 are allowable in view of Lam and Dipperstein.

More specifically regarding claims 5 and 14, Lam does not teach using a quiet termination command. Unlike the off-hook command, as pointed to by the examiner in Lam, the quiet termination command does not cause the slave test unit of the present application to become disconnected from the communication line being tested. Rather, quiet termination is described in the present application as “the ability to generate no outgoing signals” while still remaining connected (4:20 – 4:24). In other words, a slave test unit in quiet termination mode will not echo back signals received on the communication line being tested, thereby eliminating a potential signal source. Likewise, Dipperstein does not teach the quiet termination capability. Therefore, neither Lam nor Dipperstein anticipate or make obvious the subject matter of claims 5 and 14.

More specifically regarding claim 6 and 16, Lam discloses a human operator interface in relation to a master processor 110, which appears to serve as a master test unit (2:36 – 2:58). However, claims 6 and 16 include the limitations of claims 1 and 11, respectively, from which they depend. From the above discussion, the slave test unit of Lam, the VRU 180, does not possess several of the limitations of claims 1 and 11, such as the ability to

generate test signals. As a result, Lam does not anticipate nor make obvious the slave test unit of claims 6 and 16.

With respect to claims 7 and 17, the examiner identifies the remote test unit as the master processor 110 and the “other” slave test unit as the VRU 180. However, both claims 7 and 17 indicate that the remote test unit of claims 1 and 11 is another slave test unit. In other words, the remote test unit and the “other” slave test unit are the same unit, and not two distinct units. In Lam, the remote test unit is the master processor 110, which serves as a master test unit, not a slave. As a result, the applicant believes claims 7 and 17 are not anticipated by Lam, and are allowable.

Regarding claims 8 and 18, Lam discloses the dialing of a destination telephone number using DTMF (3:53 – 3:58). However, Lam does not disclose the use of DTMF for the transmission of test commands received by the slave test unit, as cited in claims 8 and 18. Hence, Lam does not disclose the subject matter of those claims.

Concerning claim 15, Lam does not allow the passing of commands from master unit to slave unit via a second slave unit. As discussed earlier, communication of any kind between two slaves is not contemplated in the Lam reference. This functionality is the subject matter of claim 15, and is utilized to allow tests to be executed by a slave not directly connected with the master test unit (12:10 – 12:12). Thus, claim 15 again is not anticipated nor made obvious by Lam.

Regarding claims 9 and 10, the terms ‘E&M’ and ‘FXO/FXS’ refer to specific types of standardized communication ports utilized in telephone equipment. Each of these standards represents different signaling specifications, connectors, connector pinouts, and the like. Such ports are commonly found on PBX systems in offices and other establishments, both domestically and abroad. As a result, general references in Lam to “lines of other carriers” (1:21) or lines that may be tested “simply by conducting a conversation with a subscriber” (4:9 – 4:10) do not in any way deal with the specific ports mentioned in claims 9 and 10. Thus, the applicant believes those claims are allowable.

As a result, Lam does not anticipate nor make obvious the present invention, which involves a slave test device and method which allows testing of a phone line to be performed by the slave test device at the direction of a master test device, thus allowing the slave to perform tests remotely, in the absence of a local human operator (3:20 – 3:27). The types of commands that the slave device may execute include those that the master test unit would

normally execute, such as the sending of electrical test signals (3:22 – 3:25; 9:28 – 10:2; 12:6 – 12:10). Thus, the applicant believes that independent claims 1 and 11, as amended in Amendment ‘A’, are allowable in view of Lam.

As a further clarification, the examiner states that the applicant “assert[s] that Lam requires fixed pieces of equipment to transmit commands through the data line” (top of page 3 of the Final Office Action). The applicant has not made that assertion. The equipment in Lam to which the applicant referred is an SVD (Simultaneous Voice and Data) modem 170 that communicates with the VRU 180 by way of two separate types of connections: a voice channel over which the tests are performed (3:37 – 4:19), and a data connection, over which commands are transmitted (3:26 – 3:36). Regardless of whether the SVD modem 170 is fixed or portable, the fact at issue is that Lam requires a separate data-only connection (i.e., the RS232 signal line between the SVD modem 170 and the VRU 180) to transmit commands. As stated in Amendment ‘A’, the embodiments of the present application do not depend on the use of a separate, dedicated data connection for the transmission of commands.

Discussion Concerning Kahkoska

The examiner has also made Kahkoska of record. Kahkoska appears to disclose a test instrument for testing Asymmetric Digital Subscriber Lines (ADSLs) (1:6 – 1:9). A throughput test for a particular ADSL is performed through the use of a test instrument 100 (FIG. 2) located on a customer premises at one end of the ADSL, and a remote test instrument 104 located at a central office at the opposite end of the ADSL (2:40 – 2:50). The test instrument 100 is operated manually by a user, while the remote test instrument 104 is controlled remotely via the test instrument 100 (5:46 – 5:50).

Generally speaking, the asymmetric nature of ADSL allows much faster “downstream” (central office to customer premises) data transfers than it does in the “upstream” (customer premises to central office) direction (1:28 – 1:43). Thus, to sufficiently test an ADSL, data traffic, in the form of “frames”, is sent in both directions over the ADSL, the upstream traffic being generated by the test instrument 100, and the downstream traffic being generated by the remote test instrument 104 (2:60 – 2:67; 4:46 – 4:52). The throughput possible on that ADSL is determined by the percentage of data “frames” that are successfully transferred from one end of the ADSL to the other at a given transfer speed (5:26 – 5:33).

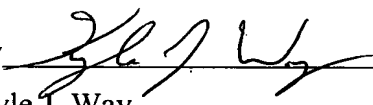
Although both the test instrument 100 and the remote test instrument 104 are sending test data during the throughput test, that test data is all being sent through a single phone connection: the same connection between the test instrument 100 and the remote test instrument 104 over the ADSL used to pass commands and status between the two. The present invention does not exhibit this limitation. A slave test unit according to embodiments of the present invention can perform extensive testing on telephone lines not utilized by the master to send the test commands (10:5 – 10:18). Also, the line being tested may be one of which the master test unit is not a party (10:19 – 11:2). Further, in some cases, the master test unit may not be connected directly with the slave test unit at the time the testing occurs (11:3 – 11:19).

As a result, the applicant believes that claims 1 and 11, as amended herein in accordance with the foregoing discussion, are not anticipated nor made obvious by Kahkoska, and thus are allowable. Additionally, since claims 2-10 and 12-18 depend from independent claims 1 and 11, respectively, the applicant believes that all of claims 1-18 are allowable.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned “**Version with markings to show changes made.**”

As a result of the discussion above, it is believed that claims 1-18 comply with the provisions of 35 USC 102 and 103. Reconsideration and favorable action are respectfully requested.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the specification:

No amendments to the specification were requested herein.

In the claims:

Claim 1 has been amended as follows:

1. (Twice amended) A slave test unit for testing voice signal quality over phone connections, comprising:

at least two phone line connectors attached to separate phone lines;

means for transmitting and receiving electrical signals via the phone line connectors, the electrical signals being transmitted and received between the slave test unit and at least one remote test unit, the electrical signals received from the at least one remote test unit comprising test commands;

means for decoding the test commands from the electrical signals received from the at least one remote test unit, and;

means for executing the test commands, the executing means including the ability to generate test signals on any of the separate phone lines;

whereby the test commands executed by the slave test unit are received exclusively from the at least one remote test unit.

Claim 11 has been amended as follows:

11. (Twice amended) A method for testing voice signal quality over phone connections, comprising the steps of:

establishing at least one phone connection, whereby each of the at least one phone connections is made with a separate remote test unit;

receiving electrical signals, the electrical signals being received from the remote test units associated with the at least one phone connections, the electrical signals comprising test commands;

decoding the test commands from the electrical signals being received from the remote test units; and

executing the test commands, the executing step including the ability to generate test signals on any of the at least one phone connections, the test commands being received exclusively from the remote test units.